Regional Dynamics and Conservation in Papua New Guinea: The Lakekamu River Basin Project

Stuart Kirsch

Can integrated conservation and development programs, which combine small-scale commercial enterprises with protected areas or reserves, provide a bulwark against the overdevelopment of natural resources in the Pacific? In recent years, international conservation organizations have established a number of conservation and development projects throughout Melanesia.[1] These projects are intended to counter the proliferation of logging and mining projects in the region and their damaging environmental consequences.

Despite the promise of integrated conservation and development programs, a number of unanswered questions are associated with their implementation. One problem is that the small political scale of most Melanesian societies is at odds with conservation objectives requiring areas large enough to support self-sustaining biological populations. As a result, most conservation projects incorporate land and resources belonging to more than one cultural-linguistic group. How do regional histories and patterns of local interaction affect the implementation of conservation and development programs that involve several societies? Some critics of so-called "green development" programs object to the extension of capitalist relations of production and development economics into the margins of the world system (Esteva 1991; Escobar 1995). Other scholars are concerned that the small scale of such projects may perpetuate underdevelopment (Howard 1993) or divert attention from the more pressing need to reform forest management policies of the state (Dove 1993). Given these concerns, therefore, do integrated conservation and develop-

The Contemporary Pacific, Volume 9, Number 1, Spring 1997, 97–120

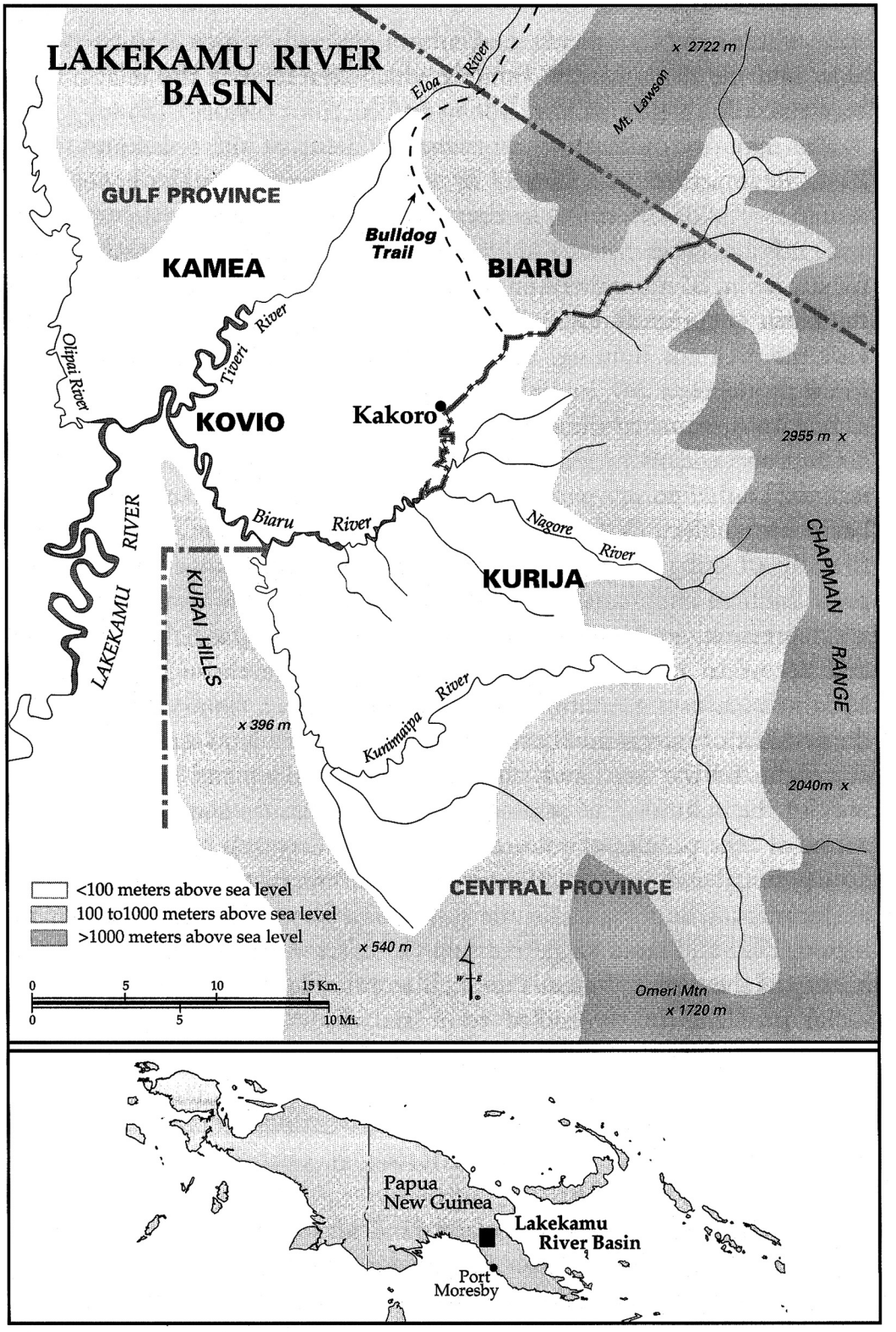
ment projects represent a viable alternative to large-scale resource extraction projects?

In this paper, I evaluate the potential benefits of integrated conservation and development programs for rural communities in Melanesia. I focus on a project sponsored by Conservation International and the Foundation for the Peoples of the South Pacific in the Lakekamu River Basin in southeastern Papua New Guinea.[2] Like other conservation and development programs, a variety of initiatives have been proposed, including ecotourism enterprises, the establishment of a field station for biodiversity research, and a variety of small-scale commercial projects, including the eventual marketing of non-timber forest products. The project is in the initial stages of consultation and implementation, and its greatest challenge is related to the struggles of four local groups to reach agreement on their respective resource ownership and use rights, as well as the appropriate environmental future of the basin. In 1994, I spent several weeks conducting ethnographic research at the project site, from which the infor-mation for this paper is primarily drawn.

The Lakekamu River Basin

The Lakekamu River Basin is located at the intersection of Central, Gulf, and Morobe Provinces in Papua New Guinea (map 1). It covers an area of approximately 2500 square kilometers, including the upper tributaries of the Lakekamu River, which drains into the Gulf of Papua (Burg 1995, 8).[3] The basin is composed of a large, relatively pristine tract of rainforest, approximately 100 meters above sea level, and surrounded by hills and mountains. The region was assigned a high priority for biodiversity conservation by a 1992 Conservation Needs Assessment survey of Papua New Guinea (Swartzendruber 1993).

Although the basin remained largely uninhabited until the twentieth century, its resources have been regularly exploited by four different cultural-linguistic groups who previously lived on its margins: the Biaru, who are based in the foothills and mountains to the northeast of the basin; the Kurija, who migrated into the basin from the mountains to the east; the Kamea, who live in the foothills and mountains along the northern edge of the basin; and the Kovio, a lowland group who lived along the southern rim of the basin until the early colonial period. In describing the region, Filer and Iamo pointed out, "Even by Melanesian standards,


LAKEKAMU RIVER BASIN
GULF PROVINCE
KAMEA
BIARU
KOVIO
Kakoro
KURIJA
CENTRAL PROVINCE
Bulldog Trail
Eloa River
Mt. Lawson
x 2722 m
Tiveri River
Olipai River
Biaru River
Nagore River
LAKEKAMU RIVER
KURAI HILLS
x 396 m
Kuminaipa River
CHAPMAN RANGE
2955 m x
2040m x
x 540 m
Omeri Mtn
x 1720 m
<100 meters above sea level
100 to1000 meters above sea level
>1000 meters above sea level
0 5 10 15 Km.
0 5 10 Mi.
Papua New Guinea
Lakekamu River Basin
Port Moresby

Map 1.

the . . . area exhibits a measure of cultural diversity which is truly remarkable, and the demarcation disputes which characterize the relationships between cultural groups have a long and complex history" (1989, 17).

The majority of the two thousand residents of the Lakekamu River Basin have settled in a cluster of villages adjacent to the government center at Kakoro, located in the northern half of the basin (PNG NSO 1991). Founded in 1972, Kakoro has a school, a health center, an office for a provincial administrator, and a grass airfield. The southern half of the basin is currently uninhabited, although local populations regularly visit the area for hunting, fishing, and to cut timber and gather other forest products.

Local responses to the integrated conservation and development program proposed by Conservation International are affected by both historical and contemporary patterns of regional interaction. Land rights in the basin are subject to heated and sometimes violent local debate, profoundly affecting what people say about themselves as well as about the past. Political and economic changes over the last few decades have put great pressure on "traditional" ways of organizing social relationships and access to natural resources. This holds true throughout most of Melanesia, as even seemingly basic concepts such as "landownership" are the product of interaction between local systems of land tenure and property rights on the one hand, and the legal categories and capitalist economy of the state on the other (Filer nd). The issues summed up by the rubric of "the politics of culture" (eg, Linnekin 1992), which emphasizes how political and economic forces shape culture, history, and identity, are of paramount importance in the Lakekamu Basin. In writing about the region, Filer and Iamo suggested that "a search to establish the one 'true' history of the disputed area is unlikely to provide a simple solution to the social problem [of protracted territorial disputes] which now exists" (1989, 31). Other projects that incorporate more than one cultural or political group are likely to face similar challenges.

The People of the Lakekamu River Basin

Three of the four groups that claim land and resources in the lowland portion of the Lakekamu River Basin belong to larger social units located in neighboring highlands or highlands fringe areas. The Biaru are allied with other Biaru-speaking populations living in Morobe Province, in the

mountains northeast of Kakoro. In the past, the Biaru living on the edge of the basin had regular exchange relations with the Kovio, who controlled the trade between the coast and the interior; this trade route was an important conduit for shell valuables central to the exchange economies of the highlands (see Hughes 1977). Historically, this group of Biaru traded bird feathers, bark cloth, and arrows to the Kovio in return for shells, which they traded to the mountain Biaru, from whom they acquired pigs and quarried stone adze blades. Shells played a major role in the Biaru economy, for they were used "like money" in marriage exchange.

The Kurija claim the southeastern portion of the Lakekamu River Basin. They are members of the Kunimaipa, who live near the headwaters of the Kunimaipa River, in the mountains of the Goilala subdistrict of Central Province, east of the basin (McArthur 1971; see also Hallpike 1977). The Kurija also used to participate in the shell trade between the coast and the interior. They gave bows and arrows, dog teeth, and tobacco to the Kovio in return for shells, which increased in value with their distance from the coast, making them a precious commodity in the interior.

Most of the Kamea who claim land in the lowland portion of the basin still live in the hills and mountains to the north. They are one of many Angan-speaking groups located throughout the eastern portion of Papua New Guinea's central mountain range, spanning Morobe, Gulf, and Eastern Highlands Provinces (Bamford nd). In the past, the Kamea living in the northern foothills regularly exploited the resources of the basin, trading lowland forest products to Kamea living at higher altitudes. Unlike their neighbors in the basin, the Kamea's system of exchange had no role for shells and dog teeth; bridewealth took the form of gifts of smoked game and garden produce (Filer and Iamo 1989, 54).

Given that the Kamea did not exchange shells, they had no need to participate in the regional economy to the south. Prior to the colonial era, they had no trade relations with any of the groups now living in the Lakekamu River Basin. In the past, the Kamea carried out raids against Biaru settlements (Filer and Iamo 1989, 31), and the Kovio also recall violent confrontations with the Kamea. Apparently the combative reputation of the Kamea kept their neighbors at bay.

The territorial claims of the Biaru and the Kamea overlap considerably, although in the past both groups probably made intermittent use of the

land and resources that are currently in dispute. Neither group lived in the contested area, for the Kamea maintained their residence in the foothills and mountains, while raids from the Kamea put pressure on the Biaru to locate their settlements a safe distance to the east.

The Kovio are the only lowland group living in the Lakekamu River Basin. They have allies among several groups along the Gulf Coast, including the Mekeo,[4] who speak a closely related language (Brown 1973, 284). The Kovio commonly intermarry with the Mekeo, providing them with important access to resources outside the basin, as well as valuable *wantok* relations and regional connections. This broad social network is particularly important given that the Kovio population numbers less than five hundred (PNG NSO 1991).

The Kovio lived in the southern portion of the Lakekamu River Basin along the lower Kunimaipa River until the 1950s, when they moved to the western edge of the basin near the junction of the Lakekamu and Kunimaipa Rivers. Their present location on the Lakekamu River enables them to travel more easily to the towns and cities along Papua New Guinea's Gulf Coast, where their ties to the Mekeo have been politically advantageous. In the past, Kovio control of the shell trade gave them power over their neighbors. Their sweeping claims to much of the land and resources in the basin are related to both their place in the precontact political landscape and their contemporary access to power in the provincial capital of Kerema.

Development Options

Economic opportunities for the inhabitants of the Lakekamu River Basin are limited. The climate and soil conditions are well suited to agriculture, but there is no efficient means of transporting produce from the basin. Travel by river to the coast and thence to Port Moresby by road is currently the best route available, although it is relatively expensive, disorganized, and potentially dangerous because of robberies along the road. Consequently, although coffee and cocoa have been planted throughout the area, harvests have been minimal (Filer and Iamo 1989, 51).

A small market held twice weekly in Kakoro sells primarily to government personnel. Peanuts and betelnut are sold in urban markets in Kerema and Port Moresby, along with seasonal forest products, meat from wild pigs, crocodile skins, and bird feathers. A few residents of the

basin earn small sums of money by selling colorful beetles and butterfly larvae to an insect-marketing program run by the Wau Ecology Institute (Orsak 1991).[5] Some of the Kamea, Kurija, and Biaru are involved in small-scale alluvial mining in the creeks that run through the hills northeast of Kakoro (Filer and Iamo 1989, 30). Inhabitants of several of the settlements or "camps" located to the north of Kakoro migrated to the area in order to pan for gold. In the late 1980s, the attempt to dredge for gold on a larger scale led to fighting between residents of the basin, as well as some of their allies from neighboring societies, over land claims. The dispute has been turned over to the local court system for settlement, where it still awaits resolution, although small-scale mining continues relatively unabated.

More substantial gold reserves have been located near the Olipai River, a western tributary of the Lakekamu River. A baseline planning study for the Lakekamu Gold Project was carried out by Filer and Iamo in 1989. Their report describes operations supporting a single, large dredge capable of processing several million cubic meters of material a year during the estimated five-to-fifteen-year lifespan of the ore (1989, 5–7). Given its relatively small scale, Filer and Iamo predicted that the project would have "very *limited impact on the natural environment*" (1989, 15; emphasis in original). If the project is implemented, it will generate modest local employment and business opportunities, including contracts to supply food to workers. With regular barge service from Port Moresby along the Lakekamu River and the construction of a new airstrip, the project would also facilitate the transportation of goods and produce to urban markets (Filer and Iamo 1989, 5–6). To date, however, the project remains in the planning phase, in part because of territorial disputes involving land claims by the Moveave, who live along the Gulf Coast. Several private mining companies continue to prospect for other ore deposits in the mountains to the north of the Lakekamu River Basin (Makamet and Sengo 1996).

Timber is another potentially valuable resource. The government has not yet granted any logging concessions in the basin, although a proposed timber project in Gulf Province would encompass the southwest corner of the basin (Werner 1995). Several Malaysian timber companies have expressed interest in obtaining logging rights for much of the remainder of the basin (Beehler 1995). Logging in the basin is economically attractive because of its large stands of primary forest and its relative accessibility.

Heavy machinery could be transported by barge directly from Port Moresby, and felled timber could be floated south to the coast via the Lakekamu River. Logging might also be introduced into the area indirectly, by establishing a large oil-palm plantation organized into a series of smallholdings, although local resource owners have already vetoed one such proposal (Makamet and Sengo 1996).

As the articles in this volume suggest, however, from an environmental standpoint, logging is a high-risk endeavor that is likely to compromise natural resources that are essential to local subsistence practices, including hunting and the harvesting of forest products (De'Ath 1980). It would also jeopardize land needed for the eventual expansion of settlements and gardens, and, as a consequence of resultant erosion, could have substantial negative impact on waterways downstream (Hviding 1992). Furthermore, the economic benefits provided by logging rarely match local expectations, particularly when rural areas lack the infrastructure necessary to productively absorb cash payments (Burton 1994). A substantially degraded environment would greatly limit the options of the people living in the basin and would probably increase their dependence on outside agencies. In 1994, resource owners were divided about the prospect of logging in the Lakekamu River Basin.

Development initiatives sponsored by Conservation International remain largely in the planning stage because of the need for basin residents to sort out disputes over resource ownership and use (Werner 1996). Several ecotourism projects have been proposed, including the construction of a *bushwalk* (hiking trail) through the mountains from Wau along the World-War-II-era Bulldog Trail, a lodge for tourists interested in birdwatching and other naturalist activities, and a biodiversity research center that would attract scientists from abroad and train Papua New Guinea students in biology and conservation (Burg 1995, 10). As a component of integrated conservation and development projects, ecotourism projects have a mixed record in Melanesia. A similar project in the Crater Mountain Wildlife Management Area, Eastern Highlands Province, has not been successful, because of the high cost of transport to the site, declining tourism throughout Papua New Guinea in general, and management difficulties (Pearl 1994). The project at Lakekamu may be able to overcome some of these problems by focusing on expatriate residents of Papua New Guinea as clientele, and because of the attraction of the area's historical significance.

These projects are based on an "environmental custodian" model of conservation and development, in which communities are provided with financial incentives to protect natural resources. The income generated by the projects is intended to substitute for revenue that might otherwise be obtained from resource extraction projects. Such programs build primarily on the experience of international conservation organizations in Africa that seek to protect wildlife from pastoralists and poachers (eg, Western 1984).

Conservation International also has plans to harvest and sell nontimber forest products from the Lakekamu River Basin. The "rain forest marketing" model of conservation and development was formulated primarily among forest peoples in the Amazon Basin, although there are numerous commercial precedents from Southeast Asia and Africa (Nepstad and Schwartzman 1992). Such projects are intended to provide an economic rationale for forest conservation by developing ways to profit from sustainable use of forest products. They may also strengthen local land claims by helping communities to demonstrate their productive stewardship of the forest and its resources.

Integrated conservation and development programs have only recently been introduced into the region. They are likely to progress slowly, for collective decision-making and community discussions about long-term patterns of resource use are time-consuming processes. Yet, there are clear signs that such programs have been well received in many communities. In several cases, offers from logging companies have been rejected in favor of participation in integrated conservation and development projects. On Makira Island in the Solomons, a program cosponsored by Conservation International, which includes a *ngali* nut oil project, an ecotourism initiative, and ongoing research to determine sustainable rates of pigeon-hunting on the island, apparently inspired villagers to reject an offer to purchase their timber from a Malaysian logging firm (Conservation International 1995; Lees 1995). The Bahinemo of the upper Sepik River region of Papua New Guinea have asked the World Wide Fund for Nature (WWF) for help in managing their natural resources and in establishing a conservation area in order to keep loggers out of the Hunstein Mountain Range (Chatterton 1996). The Lak of New Ireland have sought to cancel a contract with a timber company that has already wreaked havoc on their forests, rivers, and marine resources, opting instead to participate in a program that will be jointly managed by the Papua New Guinea De-

partment of Environment and Conservation, and the United Nations Development Program (Barry 1995).

Local Histories and Regional Planning

In the Lakekamu River Basin, attitudes toward development vary within local groups, as well as between them. Regardless of their opinions about logging and mining, most of the people living in the basin would welcome the chance to participate in small-scale income-generating ventures that are consonant with village residence. Other people, and several vocal leaders in particular, expressed concern about the effect of such projects on their future economic plans. Few of the villagers with whom I spoke referred to "conservation" as a goal in the abstract, although the practical value of protecting their forests and wildlife was recognized by many. Nonetheless, the geographic position, access to natural resources, and political power of each group strongly affect their attitudes toward the planning and implementation of integrated conservation and development initiatives.

The Biaru and the Kamea have responded positively toward plans to establish ecotourism projects in the northern portion of the Lakekamu River Basin. The major concern of the Biaru is that they continue to enjoy unimpeded access to their smallholder mining operations in the hills and mountains northeast of Kakoro. Most of the Kamea are "absentee landowners" with respect to their claims on the lowland portion of the basin, as they still reside primarily in the villages located in the foothills to the north. The Kamea village adjacent to the government center at Kakoro is largely inhabited by migrants and refugees who have been given land in return for representing Kamea interests in local affairs. Their geographic position on the northern fringe of the basin likely influences their views on exploiting its timber: some of the Kamea with whom I spoke indicated their willingness to allow logging in the basin, while others are apparently participants in a landowner corporation organized to develop the resources of the basin.

Of the four groups, the Kurija expressed the strongest reservations about the potential negative impact of large-scale development projects in the basin. They are opposed to large mining and logging projects because of their effects on the natural environment, including wildlife and the local river system. They also expressed concern that workers affiliated with

such projects would have a disruptive influence on their own communities. Cut off from their political allies in the mountains to the east, and relatively unsuccessful in ventures into the nearby urban centers of Port Moresby and Kerema, the Kurija regard subsistence agriculture and hunting as an integral part of their future, and recognize the need to protect the resources of the basin. They tend to be outspoken supporters of the small-scale development programs proposed by Conservation International. In addition, by presenting themselves as responsible guardians of the vulnerable southern quadrant of the Lakekamu River Basin, they hope to gain support from Conservation International in their disputes with the Kovio over resource ownership.

The Kovio response to the initiatives sponsored by Conservation International has been somewhat different. They are "more fully integrated into the cash economy" than their neighbors (Filer and Iamo 1989, 54). In general, they speak favorably about business development and have organized themselves into a landowner corporation in order to take advantage of the economic potential of the basin, including the exploitation of timber and gold. They have been successful in recruiting some of their neighbors to join this organization as well. According to one Kovio political leader, the goal in these undertakings is to raise the capital necessary for greater participation in the national economy of Papua New Guinea (Mangabe 1994). The Kovio make broad claims to much of the territory throughout the Lakekamu River Basin and, in a recapitulation of historical patterns of exchange and interaction, they consider the economic agenda of the basin theirs to dominate.

Not surprisingly, the Kovio have thus far resisted attempts to divide the resources of the basin among the four groups who lay claim to them, or to have all of the resource-owning groups participate as equals in discussions about the future of the basin. Their leaders, many of whom are based in the provincial capital, are wary of initiatives that might deprive them of their personal business development interests (Mangabe 1994). Perched on the edge of the Lakekamu River Basin, and oriented toward opportunities available only at the national level, many of the Kovio view the resources of the Lakekamu River Basin as the means to create new roles for themselves in the rapidly expanding national economy.

Although it is too early to ascertain whether or not Conservation International will be successful in implementing its plans for an integrated conservation and development program in the Lakekamu River Basin,

they clearly face a number of substantial challenges. Overlapping resource claims and conflicting political and economic agendas have complicated even their efforts to maintain a physical presence in the basin. For example, the Kovio have refused to allow Conservation International to establish a biodiversity research facility in the disputed southern territory of the basin, despite an invitation from the Kurija to do so. As a result, the two permanent project officers for Conservation International are currently based in Kamea territory, in the foothills to the north.

Even if compromises regarding resource ownership and use can be reached, Conservation International must still mediate debates about what constitutes appropriate use of the natural resources in the basin. Local opinions about the environment and development possibilities are affected by regional histories as well as political and economic resources. Ultimately the project is most likely to succeed if it can expand the range of economic options available to the people of the Lakekamu Basin, while contributing to local knowledge about the long-term environmental consequences of different types of development.

Overview and Assessment

A common and serious criticism of integrated conservation and development projects is that they exploit rural communities by making their labor and resources available on the world market (Escobar 1995). The task of cataloguing regional biodiversity and identifying projects with commercial potential might be seen as the "colonization" of the natural world. Nature is transformed into commodities, the value of which is determined by external market forces rather than local use and exchange. This process also poses the danger of symbolic violence to local cosmologies and systems of classification as the natural world is remapped into western discourses of science and development.

Conversely, it has also been suggested that small-scale development projects are of limited value because they are economically marginal, and that the "butterfly farming" approach to rural development prevents indigenous peoples from competing as equals in the national and global economies (Howard 1993). Dove has argued that even if such projects achieve economic success, politically powerful and strategically located intermediaries are likely to assume control of the resulting profits (1993). Drawing on data from Southeast Asia, Dove challenged the common

assertion that rural poverty is a cause of deforestation, arguing instead that the clearing of forests results in rural poverty (1993). According to him, conservation initiatives should be directed toward the governments that determine forest policy, rather than at rural communities.

The case study presented here helps to place these arguments in perspective. The people of the Lakekamu River Basin do not live in a secluded enclave of "gift relations" that is independent of capitalist relations of production or the influence of the state. Settlement patterns in the basin have long been oriented around state-controlled resources and other economic activities. Whereas Escobar assumed that local communities would resist incorporation into larger economic systems (1995), the people of the Lakekamu River Basin seek greater access to and participation in the national economy, although on their own terms. For some of them this participation means the chance to supplement subsistence production, while for others, it translates into support for large-scale resource extraction projects that may transform their economic and political position within the state.

Local land tenure has strong legal protection in Papua New Guinea, which means that resource owners must approve logging projects (Lynch and Alcorn 1994). Although it is important, as Dove advised (1993), to seek state-level reform of forest policies, resource owners in Papua New Guinea have veto power over logging projects, and it is therefore imperative to strengthen their hand as well. This objective can be achieved in part by increasing their options. Given that most integrated conservation and development projects attempt to diversify local economies, rather than focus on a single cash crop or product, they may be less vulnerable to outside control than Dove suggested (1993). It is also misleading to assume that such projects are driven entirely by commercial objectives, because villagers are often interested in improved health care, education, transportation, and other services in addition to increased incomes.

Even the dangers posed to local ways of knowing must be contextualized. Historically, these were not closed systems of knowledge; one might ask, for example, how the mountain-dwelling Kurija applied their taxonomic schema to lowland flora and fauna after migrating to lower altitudes. Although the threats to indigenous belief systems are real, the people living in the basin already draw on multiple and competing discourses on nature and the environment. Children may learn Linnean prin-

ciples of classification in primary school biology lessons, and Christians may listen to biblical parables about the relationship between humans and nature in church, but these new perspectives do not necessarily replace or diminish the old (Fife 1995; Robbins 1995). Many of the inhabitants of the basin have visited urban centers such as Kerema, Wau, and Port Moresby, watched movies on video, and read newspapers and books that address questions about the environment, economics, and development. Science and ethnoscience should not always be seen as opposed, rather than potentially complementary.

Along with competing historical narratives and contested claims to resources, debates about alternative environmental futures have become central to discussions among local inhabitants about development possibilities in the Lakekamu River Basin. The solution to the dilemmas of cultural survival in the face of change is not to disengage from broader political and economic processes, but to enhance local autonomy, so that the inhabitants of the basin may formulate their own plans for managing the critical intersection between the environment and the economy.[6] The integrated conservation and development project sponsored by Conservation International is intended to provide the residents of the Lakekamu River Basin with the information and resources that they need in order to chart their own environmental future.

Moreover, criticism of integrated conservation and development projects should be tempered by subjecting large-scale resource extraction projects to similar scrutiny. Here I can only raise questions for other studies to address: Do large-scale development projects deliver benefits to members of affected communities that are commensurate with the scope and scale of their environmental impact? Is the compensation to local communities distributed equitably among community members, or does it exacerbate existing inequalities and magnify differences associated with gender, generation, and education? Does the environmental impact of these projects jeopardize the stable subsistence base of local communities, thus increasing their reliance on outside agencies? The success of integrated conservation and development projects should be measured against alternative scenarios involving large-scale logging and mining operations owned by multinational corporations.

Finally, conservation programs need not be exclusive propositions. The projects sponsored by Conservation International will not displace other, small-scale economic ventures in the Lakekamu River Basin, which range

from gold panning, to cash cropping of coffee and cocoa, to small-scale marketing of other produce in urban markets, to the potential exploitation of small ore-bodies. Such projects should build on local experiences and resources, rather than promoting rapid, dramatic change (Kottak 1990). Conservation organizations can assist resource owners with the creation of land and resource management plans which ensure that economic undertakings are consonant with the conservation and development objectives of local residents. This would allow community members to continue to manage their own resources in the more complex economic circumstances of the present.

Conclusions

More forests have been cleared for timber, and more ore mined during the two decades of independence in Papua New Guinea than during the previous century of colonial control. The resulting ecological and social problems have been well documented, including the ongoing military confrontation over Bougainville (Connell 1991), environmental degradation downstream from the Ok Tedi Mine (Hyndman 1994; Kirsch 1989; nd; Jorgensen and Johnston 1994), and the ecological disruption caused by massive logging projects throughout the country. With no clear political breakthrough on the horizon in the formulation and implementation of environmental policy in Papua New Guinea, it is imperative that alternatives to large-scale resource extraction projects be considered.

Are integrated conservation and development programs an effective substitute for large logging and mining projects? The question resonates strongly throughout Melanesia, where the response of local communities to logging and mining companies that seek to exploit their natural resources is consistently linked to the presence or absence of other economic opportunities. Villages located in remote areas often feel that their needs have been neglected by government authorities, whom they charge with the responsibility for bringing rural development to their communities (Schieffelin 1995). Logging and mining companies typically promise to assist local businesses, develop transportation infrastructure, and improve social services, in addition to providing royalties and other cash payments. When such offers represent the only tangible development prospects available, the companies are sometimes seen as allies who can provide benefits that the government has failed to deliver (Jackson 1992).

Thus rural communities are all too often forced to choose between "too much" and "nothing at all." The economic opportunities promoted by integrated conservation and development programs can provide rural communities with an intermediate alternative.

For such programs to succeed, however, local participation must be secured at the outset, so that the values and goals of local communities are incorporated into project planning (Little 1994; although see also Rahnema 1993). Ideally, the initial idea for the project should come directly from the resource owners themselves (Regenvanu, Wyatt, and Tacconi, this volume). Regional histories and political relationships affect the reception of conservation initiatives, and these should be understood before the boundaries of conservation areas are fixed on planning maps. Sensitivity to these issues is particularly important in Melanesia, where the small scale of political and cultural groups often results in conflict over land and resource rights. Finally, if a small but powerful faction of the community opposes conservation and development initiatives because they may impede their own economic plans, the most effective means of response is to strengthen local political forums for collective decision-making.

Despite their potential, there are legitimate concerns that conservation programs will be co-opted for other ends. Project objectives may be unduly influenced by the fund-raising directives of conservation organizations, or compromised by the political demands of a host country. Several conservation projects in Melanesia are supported by transnational corporations operating large-scale resource extraction projects, and such collaboration does not always work to the advantage of local communities. Alliances between indigenous people and international conservation organizations may depend in part on western constructions of what it means to be "native," ultimately undermining the political position of local communities (Conklin and Graham 1995). While the objectives of the two groups may temporarily overlap, "environmentalists' primary goal is to promote sustainable systems of natural resource management [whereas] indigenous peoples ultimately seek self-determination and control over their own resources" (Conklin and Graham 1995, 703). While integrated conservation and development programs may expand the options and thereby enhance the autonomy of local communities, they are by no means a panacea.

Furthermore, as Howard has argued, it would be unreasonable to

expect that integrated conservation and development programs could completely replace logging and mining in the Pacific (1993; see also Saulei, this volume). The needs of national governments for revenue are too great, and the low intensity of such projects means that they can contribute little to state coffers. Nonetheless, such initiatives may facilitate a better balance between large-scale extraction projects and small-scale alternatives (Howard 1993). As such, integrated conservation and development programs are only one part of the solution to the environmental degradation caused by logging and mining. It therefore remains imperative that public pressure continue to be brought to bear on these industries regarding their environmental impact, including the call for stricter enforcement of existing environmental laws (Kirsch nd), as well as campaigns to influence the transnational corporations that invest in and manage such operations (Kirsch 1993).

Integrated conservation and development programs constitute a partial and somewhat imperfect antidote to the ravages of logging and mining in Melanesia. Yet there is considerable merit in this situation. As the papers in this volume illustrate, the southwest Pacific has reached a critical juncture in its environmental history. It is not feasible to wait for the advent of political and economic reform, or imagined ecological utopias. As Wright has recently argued, "for too long, externally promoted 'ideal' approaches to conservation have been supported at the expense of practical local solutions" (1995, 30). It is time to experiment with alternatives to massive resource extraction projects, and integrated conservation and development projects represent a valuable option.[7]

Long-term cultural survival for indigenous people is closely related to their ability to maintain a stable subsistence base and control over their territory (Maybury-Lewis 1988, 381; see also Gewertz and Errington 1991, 202–209). As active and willing participants in the state of Papua New Guinea, the inhabitants of the Lakekamu River Basin do not find isolation an attractive proposition. Like those of many other indigenous communities located in rural areas, their current economic options are somewhat limited. Individuals may leave the basin to enter the wage economy in urban areas, although the surplus of unskilled labor in the cities makes this option quite risky. Alternatively, inhabitants of the basin may auction off its resources to the highest bidder, a practice that would ultimately lead to the destabilization of their resource base, possibly forcing them from their land. A third course of action, which might be facili-

tated in part by conservation and development initiatives, is for the inhabitants of the basin to develop ways to transform their labor and natural resources into capital without compromising the long-term stability of their natural environment.

Integrated conservation and development programs may provide indigenous communities with information and economic opportunities that will enable them to better manage their own land and resources. The natural environment can then serve as a protected space within which these communities can productively respond to the challenges they face as a result of their increased and inevitable participation in the state and the world system.

* * *

FIELDWORK IN JULY–AUGUST, 1995 *was jointly supported by a Mount Holyoke College faculty research fellowship and Conservation International. I am indebted to Bruce Beehler for the invitation to join the Conservation International research team in the Lakekamu River Basin, and to Cosmas Makamet, who worked with me during my stay. Susan Diegalman and Carrie Gervais provided valuable research assistance in South Hadley and Ann Arbor. For their helpful comments on earlier versions of this paper, I would like to thank Kathleen Barlow, Bruce Beehler, Charles Burg, Colin Filer, Melissa Johnson, Cosmas Makamet, Lynn Morgan, Janet Richards, John Sengo, Buck Schieffelin, Michael French Smith, and Tim Werner. In particular, I am grateful to the people of the Lakekamu River Basin for talking to me about the problems they face, as well as their aspirations for the future. I take sole responsibility for the information and interpretations presented here. This article should not be used in court proceedings regarding title to land or resources.*

Notes

1. Conservation International cosponsors integrated conservation and development projects in the Lakekamu River Basin (Gulf and Central Provinces, PNG), New Britain (PNG), and Makira Island (Solomon Islands); the World Wide Fund for Nature sponsors programs in the Hunstein Range (East Sepik, PNG) and the Kikori River Basin (Gulf and Southern Highlands, PNG); the Papua New Guinea Department of Environment and Conservation and the United Nations Development Program directed a project in New Ireland (PNG) until 1996; the Nature Conservancy is working on Arnavon Island (Solomon

Islands); and Conservation Melanesia contributes to a number of community-based conservation and development programs throughout Papua New Guinea.

2. Conservation International was founded in 1987 and is based in Washington, DC. It has field projects in twenty-two countries focusing on the conservation of ecosystems and biological diversity, with an emphasis on building local capacity for natural resource management through integrated conservation and development projects, small business development, ecotourism, and the formation of multipurpose conservation areas. The Foundation for the Peoples of the South Pacific, PNG, was established in Port Moresby in 1968 and is involved in a range of village development and conservation projects, including village theater, education outreach, ecoforestry, site-sustainable agriculture, and sustainable development.

3. Beehler described his experiences in the Lakekamu River Basin during the course of several expeditions to conduct ornithological research (1991, 191–205).

4. On the Mekeo, see Hau'ofa (1981); Mosko (1985); Stephens (1994).

5. Beetles and butterfly larvae are purchased by the Wau Ecology Institute for about 25 toea apiece (approximately US$0.20), while preserved and mounted specimens sell for as much as US$100 overseas.

6. Escobar wrote positively about "cultural hybridity" as an alternative to the kinds of social and cultural relations reproduced through development processes (1995, 217–226).

7. Incremental agroforestry, as discussed by Clarke and Thaman (this volume), is another example of a partial, but promising, strategy for counterbalancing deforestation. Support for the planting of indigenous tree species with local use value or economic utility can also be productively incorporated into integrated conservation and development projects.

References

Bamford, Sandra
nd The Containment of Gender: Embodied Sociality among a South Angan People. PhD dissertation in progress, University of Virginia, Charlottesville.

Barry, Glen
1995 PNG: Sustainability and Logger's Threats. PNG Rainforest Campaign News [Online] Available e-mail: grbarry@students.wisc.edu and URL=http://gaia1.ies.wisc.edu/research/pngfores/ (7 August).

Beehler, Bruce
1991 *A Naturalist in New Guinea.* Austin: University of Texas Press.
1995 Personal communication.

Brown, H A
1973 The Eleman Language Family. In *The Linguistic Situation in the Gulf District and Adjacent Areas, Papua New Guinea,* edited by K J Franklin, 279–376. Pacific Linguistics C26. Canberra: Australian National University.

Burg, Charles G
1995 Ecotourism in the Lakekamu Basin of Papua New Guinea: A Feasibility Study. Master's paper, University of Maryland, College Park.

Burton, John
1994 Local-Level Mining Benefits in a Mal-Administered Regional Economy: The Case of Western Province, Papua New Guinea. Paper delivered at workshop on mining in the Asia-Pacific region, Australian National University, 18–20 September.

Chatterton, Paul
1996 Conservation as Development. Networked as *PNG: Conservation thru Community Development,* PNG Rainforest Campaign News [Online] Available e-mail: grbarry@students.wisc.edu and URL=http://gaia1.ies.wisc.edu/research/pngfores/ (25 March).

Conklin, Beth A, and Laura R Graham
1995 The Shifting Middle Ground: Amazonian Indians and Eco-Politics. *American Anthropologist* 97 (4): 1–17.

Connell, John
1991 Compensation and Conflict: The Bougainville Copper Mine, Papua New Guinea. In *Mining and Indigenous Peoples in Australasia,* edited by John Connell and Richard Howitt, 55–76. Melbourne: Sydney University Press in association with Oxford University Press.

Conservation International
1995 Makira Communities Reject Logging Firm. *CI News from the Front* 1(2), 2 pages.

De'Ath, Colin
1980 *The Throwaway People: Social Impact of the Gogol Timber Project.* IASER Monograph 13. Boroko: Institute of Applied Social and Economic Research.

Dove, Michael
1993 A Revisionist View of Tropical Deforestation and Development. *Environmental Conservation* 20 (1): 17–56.

Escobar, Arturo
1995 Encountering Development: The Making and Unmaking of the Third World. Princeton, NJ: Princeton University Press.

Esteva, Gustavo
1991 Preventing Green Redevelopment. *Development* 2:74–78.
Fife, Wayne
1995 The Look of Rationality and the Bureaucratization of Consciousness in Papua New Guinea. *Ethnology* 34 (2): 129–141.
Filer, Colin
nd Compensation, Rent and Power in Papua New Guinea. In *Compensation and Resource Development,* edited by Susan Toft. Monograph 6. Boroko: Law Reform Commission. In press.
Filer, Colin S, and Wari Iamo
1989 Base-Line Planning Study for the Lakekamu Gold Project, Gulf Province. Mimeo, Department of Anthropology and Sociology, University of Papua New Guinea, Port Moresby. January (revised draft). 96 pages.
Gewertz, Deborah B, and Frederick Errington
1991 *Twisted Histories, Altered Contexts: Presenting the Chambri in a World System.* New York: Cambridge University Press.
Hallpike, C R
1977 *Bloodshed and Vengeance in the Papuan Mountains.* New York: Oxford University Press.
Hau'ofa, Epeli
1981 *Mekeo: Inequality and Ambivalence in a Village Society.* Canberra: Australian National University.
Howard, Michael
1993 Competing Views of the Environment and Development in Irian Jaya. Paper presented at the annual meetings of the American Anthropological Association, Washington, DC, 17–21 November. 16 pages.
Hughes, Ian
1977 *New Guinea Stone Age Tools. Terra Australis* 2. Canberra: Australian National University, RSPacS, Department of Prehistory.
Hviding, Edvard
1992 Upstream Development and Coastal Zone Conservation: Pacific Islands Perspectives on Holistic Planning. Discussion paper commissioned by Greenpeace Pacific Campaign. 11 pages.
Hyndman, David
1994 *Ancestral Rain Forests and the Mountain of Gold: Indigenous Peoples and Mining in New Guinea.* Boulder: Westview Press.
Jackson, Richard
1992 Undermining or Determining the Nature of the State? In *Resources, Development and Politics in the Pacific Islands,* edited by Stephen Henningham and R J May, 79–89. Bathurst: Crawford House Press.

Jorgensen, Daniel, and Barbara Rose Johnston
1994 Mineral Development, Environmental Degradation and Human Rights: The Ok Tedi Mine, Papua New Guinea. In *Who Pays the Price? The Sociocultural Context of Environmental Crisis,* edited by Barbara Rose Johnston, 86–98. Society for Applied Anthropology, Committee on Human Rights and the Environment. Washington, DC: Island Press.

Kirsch, Stuart
1989 The Yonggom, the Refugee Camps along the Border, and the Impact of the Ok Tedi Mine. *Research in Melanesia* 13:30–61.
1993 The Yonggom of Papua New Guinea and the Ok Tedi Mine. In *State of the Peoples: A Global Rights Report on Societies in Danger,* 113. From Cultural Survival. Boston: Beacon Press.
nd Indigenous Response to Environmental Impact along the Ok Tedi. In *Compensation and Resource Development,* edited by Susan Toft. Monograph 6. Port Moresby: PNG Law Reform Commission. In press.

Kottak, Conrad
1990 Culture and "Economic Development." *American Anthropologist* 92 (3): 723–731.

Lees, Annette
1995 Makira Project Profile. *Conservation International Annual Report, 1994.* Washington, DC: Conservation International.

Linnekin, Jocelyn
1992 On the Theory and Politics of Cultural Construction in the Pacific. *Oceania* 62:249–269.

Little, Peter D
1994 The Link Between Local Participation and Improved Conservation: A Review of Issues and Experiences. In *Natural Connections: Perspectives in Community-Based Conservation,* edited by David Western, R Michael Wright, and Shirley Strum, 347–372. Washington, DC: Island Press.

Lynch, Owen J, and Janis B Alcorn
1994 Tenurial Rights and Community-Based Conservation. In *Natural Connections: Perspectives in Community-Based Conservation,* edited by David Western, R Michael Wright, and Shirley Strum, 373–392. Washington, DC: Island Press.

Makamet, Cosmas, and John Sengo
1996 Personal communication.

Mangabe, Joseph
1994 Personal communication.

Maybury-Lewis, David
1988 A Special Sort of Pleading: Anthropology at the Service of Ethnic Groups. In *Tribal Peoples and Development Issues: A Global Overview,* edited by John H Bodley, 375–390. Mountain View, CA: Mayfield.

McArthur, Margaret
1971 Men and Spirits in the Kunimaipa Valley. In *Anthropology in Oceania: Essays Presented to Ian Hogbin,* edited by L R Hiatt and C Jayawardena, 155–189. San Francisco: Chandler.

Mosko, Mark
1985 *Quadripartite Structures: Categories, Relations and Homologies in Bush Mekeo Culture.* New York: Cambridge.

Nepstad, Daniel C, and Stephan Schwartzman, editors
1992 *Non-Timber Products from Tropical Forests: Evaluation of a Conservation and Development Strategy.* Advances in Economic Botany, 9. New York: New York Botanical Garden.

Orsak, Larry
1991 The Wau Ecology Institute's "Insect Ranch" Programme. Pamphlet of Wau Ecology Institute.

Pearl, Mary C
1994 Local Initiatives and the Rewards for Biodiversity Conservation: Crater Mountain Wildlife Management Area, Papua New Guinea. In *Natural Connections: Perspectives in Community-Based Conservation,* edited by David Western, R Michael Wright, and Shirley Strum, 193–214. Washington, DC: Island Press.

PNG NSO, Papua New Guinea National Statistics Office
1991 *Final Figures: Census Unit Populations, Morobe and Gulf Provinces.* Port Moresby: National Statistics Office.

Rahnema, Majid
1993 Participation. In *The Development Dictionary,* edited by Wolfgang Sachs, 116–131. London: Zed Books.

Robbins, Joel
1995 Dispossessing the Spirits: Christian Transformations of Desire and Ecology among the Urapmin of Papua New Guinea. *Ethnology* 34 (3): 211–224.

Schieffelin, Edward L
1995 Attitudes Towards Logging on the "Great Papuan Plateau." PNG Rainforest Campaign News [Online] Available e-mail: grbarry@students.wisc.edu and URL=http://gaia1.ies.wisc.edu/research/pngfores/ (10 September).

Stephens, Michelle
1994 *A'isa's Gifts.* Berkeley: University of California Press.

Swartzendruber, J F
1993 *Papua New Guinea Conservation Needs Assessment: Synopsis Report.* Washington, DC: Biodiversity Support Program and Boroko: Government of Papua New Guinea, Department of Conservation and Environment.
Werner, Tim
1995 Personal communication.
1996 Personal communication.
Western, David
1984 Conservation-Based Rural Development. In *Sustaining Tomorrow: A Strategy for World Conservation and Development,* edited by Francis R Thibodeau and Hermann H Field, 94–110. Hanover, NH: University Press of New England.
Wright, R Michael
1995 Alleviating Poverty and Conserving Wildlife in Africa: An "Imperfect" Model from Zambia. In *Global Ecosystems: Creating Options Through Anthropological Perspectives,* edited by Pamela J Puntenney, 19–32. NAPA Bulletin 15. Washington, DC: American Anthropological Association.

Abstract

Can integrated conservation and development programs, which combine commercial ventures with conservation initiatives, help to preserve the forests of Melanesia? Can conservation and development programs enable rural communities to better manage their land and resources in the face of rapid economic change? This paper explores these questions through discussion of an integrated conservation and development project sponsored by Conservation International in the Lakekamu River Basin of southeastern Papua New Guinea. The project encompasses land and resources belonging to four different cultural groups, a situation not uncommon in Melanesia, and the paper analyzes how regional histories and contemporary political relations have affected its implementation. The paper also responds to several critical assessments of integrated conservation and development programs by considering the ways in which the project may affect the people of the Lakekamu River Basin.

KEYWORDS: conservation, Conservation International, development, Lakekamu River Basin, Papua New Guinea.